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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,244	05/12/2006	Kent Erik Mattsson	P71272US0	7105
136 7590 07/17/2007 JACOBSON HOLMAN PLLC 400 SEVENTH STREET N.W. SUITE 600 WASHINGTON, DC 20004			EXAMINER STAHL, MICHAEL J	
			ART UNIT 2874	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,244	Applicant(s) MATTSSON ET AL.	
	Examiner Mike Stahl	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-55 is/are rejected.
- 7) ☒ Claim(s) 20,28,39,41,45-47,51 and 52 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/19/07</u> . | 6) <input type="checkbox"/> Other: ____. |

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Claim Objections

Claim 20 is objected to because in line 5, "form" should be changed to "from".

Claim 28 is objected to because it should depend from claim 27 rather than claim

1. Note that no rare earths are recited in claim 1.

Claim 39 is objected to because it lacks a terminal period (.).

Claim 41 is objected to because it lacks a terminal period.

Claim 45 is objected to because "with a view" appears to be an intention.

Replacement of "with a view to minimizing" with "to minimize" is recommended.

Claim 46 is objected to because it ends with a semicolon (;).

Claim 47 is objected to because it should depend from claim 46 rather than claim

43. Note that claim 47 appears to be further limiting process parameters which are initially set forth in claim 46.

Claim 51 is objected to because it ends with a semicolon.

Claim 52 is objected to because it recites SiF₄, N₂O, NO, and NO₂ twice each, and N₂ three times. The redundant recitations should be deleted.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claims 1, 2, 5, 6, 10, 11, 14, 15, 16, 17, 23, 24, 25, 26, 35, 47, 49, and 54 contain the phrase “such as”. The phrase “such as” confuses the scope of these claims because it presents alternative ranges within a single claim. See e.g. MPEP 2173.05(d). Alternative or preferred ranges should reside in separate dependent claims. Claims 2-55 are rejected by dependence from claim 1.

Claim 7 is rejected as being indefinite because it is inconsistent with parent claim 1. Claim 1 establishes that y can be in the range from 0.02 to 0.3, but claim 7 attempts to broaden that range by reciting that y can be in the range from 0.01 to 0.5. Note 37 CFR 1.75(c) and 35 U.S.C. 112 fourth paragraph.

Claim 8 is rejected as being indefinite because it is inconsistent with parent claim 1. Claim 1 establishes that y can be in the range from 3.9 to 4.1, but claim 8 attempts to broaden that range by reciting that y can be in the range from 3.8 to 4.2. Note 37 CFR 1.75(c) and 35 U.S.C. 112 fourth paragraph.

Claim 9 is rejected as being indefinite because it is inconsistent with parent claim 1. Claim 1 establishes that y can be in the range from 0.02 to 0.3, but claim 9 conflicts with claim 1 by reciting that y can be in the range from 0.015 to 0.12 (the lower bound is less than what claim 1 allows).

Claim 15 is rejected as being indefinite because it fails to particularly point out applicant's invention. In particular, claim 15 recites “an element selected from the group *comprising...*” (italics added). Thus the group is open-ended and can include any element beyond those which are listed. The phrase should be rewritten by either deleting “comprising” or replacing “comprising” with “consisting of”. Note MPEP 2173.05(h).

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Claim 16 is rejected as being indefinite because it is inconsistent with parent claim 1. Claim 16 states that the element X *or the material* $\text{Si}_a\text{O}_x\text{N}_y\text{X}_z\text{H}_v$ can include up to 100% phosphorus. If the material is 100% phosphorus, then it does not satisfy the ranges on a and y set forth in claim 1. It appears that "X or the material" may have been a typo and should read "X of the material". Furthermore, it is not clear whether the recited percentages are in terms of mass, atoms, or what.

Claim 17 is rejected as being indefinite because it fails to particularly point out applicant's invention. In particular, claim 17 recites "selected from the group *comprising...*" (italics added). Thus the group is open-ended and can include any element beyond those which are listed. The phrase should be rewritten by either deleting "comprising" or replacing "comprising" with "consisting of". Note MPEP 2173.05(h).

Claim 17 is also rejected as being indefinite because it is inconsistent with parent claim 1. Claim 1 defines the composition of the material as having at least one of Si, O, N, H, B, Al, P, S, As, or Sb only. No other elements are permitted. However, claim 17 attempts to further include Ge.

Claims 18 and 19 are rejected by dependence from claim 17, and also because they attempt to include Ge in the same way.

Claim 20 is rejected as being indefinite because it fails to particularly point out applicant's invention. In particular, claim 20 recites "an element [from] the group *comprising...*" (italics added). Thus the group is open-ended and can include any element beyond those which are listed. The phrase should be rewritten by either deleting "comprising" or replacing "comprising" with "consisting of". Note MPEP 2173.05(h).

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Claim 22 is rejected as being indefinite because it is inconsistent with parent claim 1. Claim 1 establishes that y can be in the range from 0.02 to 0.3, but claim 22 conflicts with claim 1 by reciting that y can be in the range from $0 < y \leq 0.2$ (the lower bound is less than what claim 1 allows).

Claim 23 is rejected as being indefinite for failing to particularly point out applicant's invention. In particular, various values for atomic density are recited but no units are given. Therefore the claim does not clearly identify whether the values are for atoms/cm³, atoms/ft³, or atoms per some other unit volume.

Claim 27 is rejected as being indefinite because it fails to particularly point out applicant's invention. In particular, claim 27 recites "selected from the group of elements *comprising...*" (italics added). Thus the group is open-ended and can include any element beyond those which are listed. The phrase should be rewritten by either deleting "comprising" or replacing "comprising" with "consisting of". Note MPEP 2173.05(h).

Claim 31 is rejected as being indefinite because it fails to particularly point out applicant's invention. In particular, claim 31 recites "selected from the group of elements *comprising...*" (italics added). Thus the group is open-ended and can include any element beyond those which are listed. The phrase should be rewritten by either deleting "comprising" or replacing "comprising" with "consisting of". Note MPEP 2173.05(h).

Claim 35 is rejected as being indefinite because it is unclear what is meant by "alternative B/P doping levels". There is no guidance in the specification as to what B/P doping levels are to be considered as "alternative".

Claim 36 is rejected as being indefinite because it is inconsistent with parent claim 1. Claim 1 defines the composition of the material as having at least one of Si, O,

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N, H, B, Al, P, S, As, or Sb only. No other elements are permitted. However, claim 36 attempts to further include Ge.

Claim 44 is rejected as being indefinite because it refers to a generic commercial product (“PECVD-apparatus from Surface Technology Systems”) rather than setting forth the particular structure of that apparatus. Note MPEP 2173.05(u). Also, claim 44 recites the term “type” which confuses the scope of the claim as explained in MPEP 2173.05(b).

For purposes of comparison with prior art in this action, limitations encompassed by “such as” will be suspended and the least restrictive scope will be applied. Limitations which conflict with those in a parent claim will be suspended and the parent claim limitations will control. Claims which improperly recited an open-ended group (“... from the group comprising” language) will be treated as though only the explicitly recited elements are permitted. Claim 23 will not be further treated in this action because the units of density are unspecified. Claim 35 will not be further treated in this action because the scope or meaning of “alternative B/P doping levels” is unknown at this time. Claim 44 will not be further treated in this action because it recites no structure to which the prior art can be compared and because it is not clear what is encompassed by “type”.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-5, 10-11, 14, 24-26, 34, 37, 39, 42-43, 45-46, and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by Taneya et al. (US 5488678).

Claim 1: Taneya discloses an optical waveguide comprising core and cladding regions **254** and **252/256** (respectively) for confining light, the regions being formed on a substrate **251**, a part of the core including material of the composition $\text{Si}_a\text{O}_x\text{N}_y\text{X}_z\text{H}_v$, wherein a, x, y, and z fall within the recited ranges, and X is selected from the recited group, and the ratio y/z exceeds 1.2. See fig. 4 and its associated description starting at col. 11. In particular, the core **254** is made of Si_3N_4 which corresponds to $a = 3$, $x = 0$, $y = 4$, $z = 0$, $v = 0$ (note that no range for v is provided in claim 1). The ratio y/z in this case is infinity, which is greater than 1.2.

Claim 3: a is within the range from 2.9 to 3.1 ($a = 3$).

Claim 4: x is in the range from 0 to 0.1 ($x = 0$).

Claim 5: y is in the range from 3.9 to 4.1 ($y = 4$).

Claim 10: Because the material in the reference has the same chemical composition as defined by claim 1, it is considered inherent that the material exhibits an optical absorption of less than 0.1 dB/cm at 1508 nm (MPEP 2112.01(II)).

Claim 11: The relative concentration of hydrogen in the material is smaller than 10^{-2} (since $v = 0$).

Claim 14: The concentration v/y is smaller than 10^{-2} (since $v = 0$).

Claim 24: The core or cladding region includes material having an index at 1550 nm in the range 1.45-2.02 (Si_3N_4 has an index of 2.02 as indicated in the present specification at p. 2 ln. 27).

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Claim 25: The optical waveguide is adapted to guide light in a wavelength range from 250 nm to 3.6 microns.

Claim 26: The optical waveguide is adapted to guide light comprising wavelengths in the range from 1260 nm to 1660 nm.

Claim 34: The waveguide includes a buffer material **253/255** constituting a barrier between the core and cladding regions and partially surrounding the core region.

Claims 37 and 39: The method of making the fig. 4 device includes the recited steps.

Claim 42: The substrate **251** is a silicon substrate.

Claim 43: Formation of layers on the substrate is by plasma enhanced chemical vapor deposition (col. 11 lns. 47-55).

Claims 45-46: Because the material in the reference has the same chemical composition as defined by claim 1, it is considered inherent that processing parameters of the PECVD process are optimized to minimize the optical absorption around 1508 nm.

Claim 53: The overall device of fig. 4 includes an optical waveguide as defined in claim 1.

Conclusion

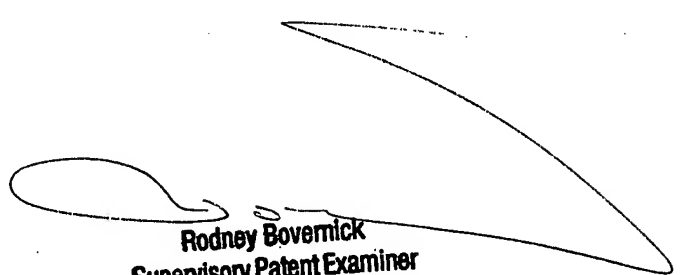
Inquiries about this letter may be directed to examiner Stahl at the number below. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the technical support staff supervisor at 571-272-1626. Official correspondence which is eligible for submission by facsimile and which pertains to this application may be faxed to 571-273-8300. Information regarding the status of an

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application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions about the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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July 9, 2007



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